



THE UNIVERSITY OF ARIZONA  
COLLEGE OF MEDICINE TUCSON

Physiology

## Seminars in Translational & Advanced Research (STAR)

Friday, January 23  
Arizona Health Sciences Center  
Room 8403  
11:00am - 12:00pm

<https://arizona.zoom.us/j/85062222452>



Steve Crone, PhD

*Associate Professor of Neurosurgery  
Cincinnati Children's Hospital Medical  
Center*

Host: Ralph Fregosi

### "Targeting Spinal Circuits to Improve Breathing after Spinal Cord Injury"

The Crone Laboratory studies how neural circuits that control breathing are altered by spinal cord injury with the goal of developing new approaches to restore breathing and prevent ventilator dependence in people living with spinal cord injury.

We use mouse models of spinal cord injury along with a variety of tools to examine the function of respiratory circuits at the molecular, network, and whole animal physiology levels. Towards this end, we recently discovered a particular class of spinal cord neuron (called V2a) that when activated is able to restore function to a previously paralyzed diaphragm after spinal cord injury. Our findings show that breathing can be restored by directly targeting spinal circuits below an injury; thus, it is not always necessary to regrow axons across the injured region of the cord to get improvement in respiratory function. Our current work is trying to determine the mechanism(s) by which V2a neurons can restore breathing, which subtypes of V2a neurons are most important, and what drugs might target molecules in V2a neurons that could be used to improve breathing in people living with spinal cord injury.